



Global Economic Impact Capability

Beirut, Lebanon

July 2012

The Oxford Economics model can measure the economic impacts over time of decisions regarding policy, regulation and spending for countries

- We have models that provide **long term estimates** of **GDP, employment, consumer spending, investment**, and other economic indicators over time
- The Oxford Economics Model is *global*
 - ▶ Detailed forecasts for more than 175 countries
 - ▶ Updated each month, quarter, and bi-annually for select countries
 - ▶ Provides forecasted estimates of economic and financial variables (e.g., interest rates, stocks, bonds)
- With this modeling capability decision-makers, foreign investors and other stakeholders can evaluate questions such as:
 - ▶ How critical changes in foreign direct investment in the oil, natural gas and tourism sector can impact Gross Domestic Product (GDP)
 - ▶ How expansion or reform of specific industry sectors will impact an industry's production costs
 - ▶ How changes in regional and global trade, changes in economic conditions, new market opportunities and increasing risks will affect the exchange rate



Oxford Economics forecast track record

Oxford Economics Forecasting Record 2007-2009

(average absolute forecast divergence for real GDP growth)

	USA	Eurozone	Japan
OE	0.7	1.4	2.0
EIU	1.0	2.2	2.6
Global Insight	0.7	1.7	2.4
IMF	1.6	2.2	2.9
OECD	1.1	1.8	2.7
Consensus Economics	1.0	1.8	2.4
Macro Advisors	1.2	-	-

Note: Forecasts made in December for year ahead.

The Oxford Global Economic Model – Overview

- The Oxford Global Economic Model is the most widely used commercial International Macro Model, with clients including international institutions, Ministries of Finance and central banks around the world, and a large number of blue-chip companies
- It provides a rigorous and consistent structure for forecasting and scenario analysis
- The Model covers 46 economies in detail, including many emerging markets, and provides headline forecasts for another 30 countries.
- Forecasts are provided for 5, 10 and 25 years ahead which are updated each month
- Oxford Economics' powerful user-friendly software is very easy to use and is important for two reasons:
 - ▶ It permits easy data manipulation, e.g., changing the values of input variables when running “what if” scenarios
 - ▶ It also enables non-economists to learn how to use the model

A summary of the Oxford Economics Model structural components

- The country models are fully interlinked via trade, prices, exchange rates and interest rates, with the blocs completing “all-the-world” coverage
- Model variables are divided into demand and supply, core and non-core
 - ▶ Coverage of core variables is standard across all country models; non-core coverage is determined by data availability and country-specific requirements
 - ▶ **Core demand** variables include all the aggregate expenditure components, at constant and current prices, monetary policy variables and financial variables
 - ▶ The **demand non-core** includes disaggregated consumption and investment, as well as important indicator variables such as retail sales
 - ▶ **Core supply** consists of variables determining the natural levels of output, unemployment, real wages and prices are disaggregated in this block
 - ▶ **Non-core supply** disaggregates employment and nominal earnings
 - ▶ Separate blocks build up the government, personal and corporate sector flow accounts, while the G7 energy model is also available in certain country models
- While the Oxford model(s) contain monetary and financial variables, they are not “financial” models meaning that analyses of public financial management alternatives are limited

A simple methodological approach can be used to provide rigorous analyses using the Oxford Economics Model

- Each policy or spending decision that one wants to evaluate using the model should be put through the following steps:
 1. Working with stakeholders, explore a proposed policy, regulation, spending, or investment change
 - After deconstructing the issue an optimal analytical approach upon which to address the questions should be selected
 2. After the study questions are defined and an approach or model is selected, variables which best capture the expected “shock” or change to the baseline should be identified
 3. Next, the expected impacts according to the selected modeling approach are computed
 - This analysis involves altering one or more economic, geographic, and demographic variable combinations in a series of alternative scenarios, to measure primary, secondary, and tertiary impacts to ensures the full economic impacts are captured
 4. Interpretation and presentation of the identified impacts is critical
 - The new forecast of the economy is compared to the original baseline forecast so that differences in the values for GDP, employment, government revenues, etc., can be compared to constitute the “impacts” to the economy that would be expected to result from the policy or spending change
 5. Results are then rigorously reviewed for quality assurance
 - The review should engage a team of highly trained and skilled economists, financial analysts, and other specialists to ensure the highest level of accuracy, and to adjust for any unavoidable weaknesses or omissions in the data



Model Case Study

For USAID Lebanon, we are assessing regulations to foster stakeholder advocacy using our Regulatory Impact Assessment (RIA) capability along with a custom built model of Lebanon

- To *build capacity*, we are providing an economic impact analysis of Lebanon's WTO accession to assess the short-term and long-term impacts on industry sectors, trade, and a host of other economic indicators
- We developed and delivered seminars in 3 cities in Lebanon to teach private sector participants how to assess regulations
- The problem: most RIAs are based on cost-benefit analysis that can prove difficult to do
 - ▶ Data issues
 - ▶ Quantification issues
 - ▶ Underestimate of (not identifying all) costs, benefits
 - ▶ Diverse audience: MBAs, students, farmers, business professionals
- The challenges we met:
 - 1) Devised an approach that is based on CBA but is simpler to do
 - 2) Offered more sophisticated approaches, e.g., economic models, and plans to deliver to a university for continued access

Background: Competition Law and changes in market access are projected to be the most immediate and likely requirements associated with WTO accession

- **Why the Competition Law?**

- ▶ 5% of all farmers exploit 47% of the total farm area and 36% of non-agricultural goods and services markets have a dominant firm with a sales market share of at least 40%
- ▶ Lack of competition, in terms of barriers to entry or import activity, creates a price mark up that leads to a distortion in the allocation of resources between sectors
- ▶ SME's represent 95% of all business entities and employ over 90% of the Lebanese labor force, but receive approximately 16% of all loans from commercial banks
- ▶ **Draft Law:** Prohibits a dominant position only if it engages in any act with an anticompetitive impact on the market, therefore, the law does not prohibit dominant position, but only the abuse of it
- ▶ **Applicable Outcome:** Provides incentives to invest in small and medium sized businesses while reducing the level of rents accruing from monopolistic positions that exceed 19% of GDP

- **Why Market Access?**

- ▶ Lebanon is currently holding WTO negotiations related to goods, services, and trade related aspects of intellectual property (TRIPS) with Working Party member countries
- ▶ Will ultimately reduce or eliminate tariffs across a number of sectors and goods that will have economic consequences for government revenue, imports and exports, consumption levels, etc.

- **Other requirements were not chosen for this analysis as they are not expected to have a significant near-term impact on Lebanon's macro-economy**

* The World Bank, The Union of Arab Banks. "The Status of Bank Lending to SMEs in the Middle East and North Africa Region: The Results of a Joint Survey of the Union of Arab Banks and the World Bank." January. <http://siteresources.worldbank.org/INTMNAREGTOPPOVRED/Resources/MENAFIflagshipSMEFinance2_3_11.pdf>

Example: Scenario 1 - Decrease import tariffs by 50%, raise the standard VAT tax rate to 12% (effective tax rate increase from 7 to 8 %)

- **Tariff Rate Modeling Assumptions**

- ▶ We assume a 50% reduction in customs duties between 2012 and 2021
- ▶ Assuming a 5% standard customs tax rate, **this represents a reduction in the customs and excise duties effective tax variable of 2.5% between 2012 and 2021**

- **VAT Rate Modeling Assumptions**

- ▶ We take the 2011 effective tax rate as calculated by the Oxford model of 7% as a percentage of the standard VAT tax rate of 10% to arrive at a ratio of .7 (7%/10%)
- ▶ This ratio is applied to standard VAT rates of 12% to calculate the estimated effective tax rates (8%) associated with this VAT increase
- ▶ To represent an increase in the VAT, the effective VAT tax rate of 8% is modeled as a direct input in the Oxford model between 2012 and 2021. **This represents a 1% increase from the Oxford baseline between 2012 and 2021**

Example: Scenario 2 - Similar to scenario 1, replacing the standard VAT rate from 12% to 16%

- **Tariff Rate Modeling Assumptions**

- ▶ We assume a 50% reduction in customs duties between 2012 and 2021
- ▶ Assuming a 5% standard customs tax rate, **this represents a reduction in the customs and excise duties effective tax variable of 2.5% between 2012 and 2021**

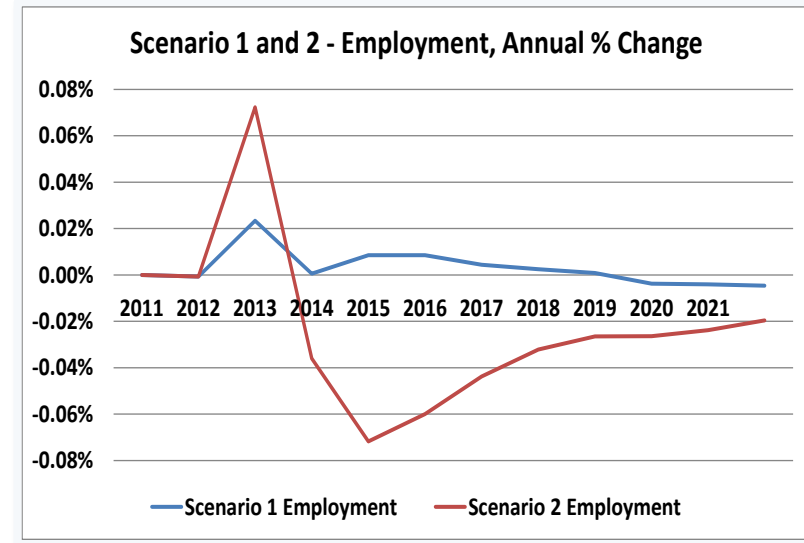
- **VAT Rate Modeling Assumptions**

- ▶ We take the 2011 Effective Tax Rate as calculated by the Oxford model of 7% as a percentage of the standard VAT tax rate of 10% to arrive at a ratio of .7 (7%/10%)
- ▶ This ratio is applied to standard VAT rates of 16% to calculate the estimated effective tax rates (11%) associated with this VAT increase
- ▶ To represent an increase in the VAT, the effective VAT tax rate of 11% is modeled as a direct input in the Oxford model between 2012 and 2021. **This represents a 4% increase from the Oxford baseline between 2012 and 2021**

Example: Scenario 1 and 2 Results

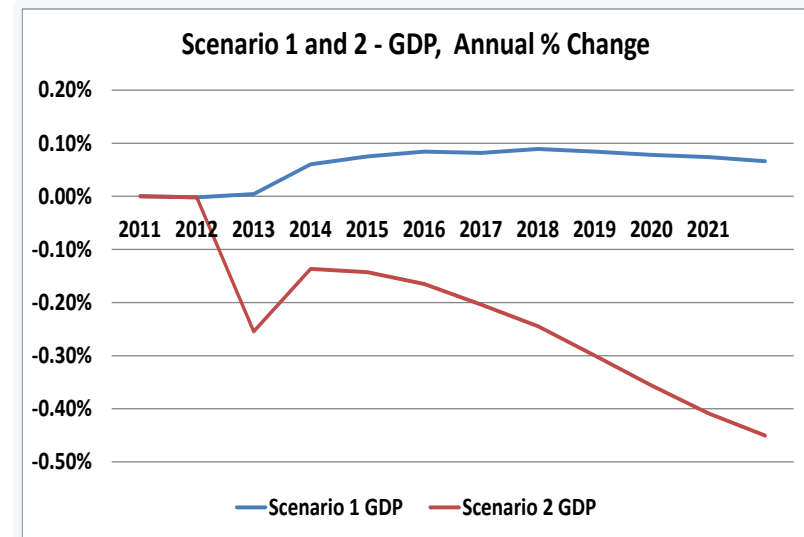
• Scenario 1 (12%VAT)

- ▶ Increases in market access increases Lebanon's **GDP** by a total of approximately **LBP 400 B** (annual increase of LBP 40B) between 2012 and 2021, representing an average annual increase of **approximately 0.07%**
- ▶ This compares to an average annual growth rate in GDP of approximately 4.8 % as projected between 2012 and 2021
- ▶ A total **increase in employment** of approximately **50 jobs** (average annual increase of approximately 0.004%)
- ▶ This compares to an average annual growth rate in employment of approximately 1.1 % as projected between 2012 and 2021



• Scenario 2 (16% VAT)

- ▶ Increases in market access reduces Lebanon's **GDP** by a total of approximately **LBP 1.6T** (annual average of LBP 160B) between 2012 and 2021, representing a minimal average annual decrease of approximately 0.27%
- ▶ This compares to an average annual growth rate in GDP of approximately 4.8 % as projected between 2012 and 2021
- ▶ A small but measurable **reduction of approximately 400 jobs** (average annual reduction of approximately 0.03%) is exhibited
- ▶ This compares to an average annual growth rate in employment of approximately 1.1% as projected between 2012 and 2021



Country-specific models included in the Oxford Economics Model

Primary Countries / Regions				Secondary Countries / Regions					
Country / Region	# Var	Country / Region	# Var	Region	Country	# Var	Region	Country	# Var
AFRICA	102	KOREA	332	Africa	Cameroon	6	Latin America	Bolivia	7
ARGENTINA	174	LATAMER	122	Africa	Egypt	9	Latin America	Colombia	0
AUSTRALIA	280	MALAYSIA	192	Africa	Kenya	6	Latin America	Costa Rica	6
AUSTRIA	387	MEXICO	263	Africa	Morocco	4	Latin America	Dominican Republic	6
BELGIUM	384	NETH	424	Africa	North Africa	4	Latin America	Ecuador	11
BRAZIL	201	NORWAY	262	Africa	South Africa	6	Latin America	Panama	7
BULGARIA	309	OPEC	202	Africa	Sub Saharan Africa	3	Latin America	Paraguay	6
CANADA	342	PHILIPPI	187	Africa	Sudan	4	Latin America	Peru	7
CHILE	173	POLAND	341	Africa	Tunisia	4	Latin America	Uruguay	4
CHINA	423	PORTUGAL	323	Africa	Uganda	6	EU	Cyprus	8
CROATIA	198	RESTOECD	70	OPEC	Algeria	14	EU	Estonia	8
CZECH	336	RESTWORL	142	OPEC	Ecuador	11	EU	Latvia	8
DENMARK	357	ROMANIA	307	OPEC	Iran	17	EU	Lithuania	8
EASTEUR	108	RUSSIA	267	OPEC	Iraq	17	EU	Malta	8
EU	92	SAFRICA	187	OPEC	Kuwait	11	EU	Slovenia	8
EURO_11	155	SINGAPORE	235	OPEC	Libya	11	Rest of World	Bahrain	4
FINLAND	367	SLOVAKIA	339	OPEC	Nigeria	14	Rest of World	Bangladesh	6
FRANCE	444	SPAIN	434	OPEC	Oman	10	Rest of World	Israel	6
GERMANY	444	SWEDEN	411	OPEC	Qatar	10	Rest of World	Myanmar	4
GREECE	321	SWITZ	325	OPEC	Saudi Arabia	10	Rest of World	Pakistan	6
HK	258	TAIWAN	334	OPEC	UAE	11	Rest of World	Philippines	6
HUNGARY	337	THAILAND	194	OPEC	Venezuela	14	Rest of World	Singapore	6
INDIA	268	TURKEY	266	Eastern Europe	Czech Republic	6	Rest of World	Syria	4
INDONESI	188	UAEMOD	304	Eastern Europe	Kazakhstan	8	Rest of World	Vietnam	6
IRELAND	338	UK	643	Eastern Europe	Slovak Republic	6	Rest of OECD	Iceland	6
ITALY	532	US	572	Eastern Europe	Ukraine	4	Rest of OECD	Luxembourg	9
JAPAN	367	WORLD	181	Latin America	Argentina	6	Rest of OECD	New Zealand	6

Examples of current users of the model

Agilent Technologies	Saudi Aramco	IMF
Daimler Chrysler	Banco Santander	Unilever
Manchester City Council	GKN	Cadbury Schweppes
Arcelor	Seeda	ING
Deutsche Bank	Bank of England	Visa
McKinsey	Goldman Sachs	Commerzbank
Asian Development Bank	Shell International	Intel
DHL	BMW	World Bank
Nacco Materials Handling Group	Hydro Aluminum	Corus
AstraZeneca	Swiss Reinsurance	KPMG
EADS Astrium Ltd	Boeing Company	World Health Organization
NWDA	IBM	U.S. Federal Reserve Board
American Machine Tools Assoc.	UBS	Federal Reserve Board
Rolls-Royce	BP International	Putnam
BAE Systems	ICI	Alliance Bernstein
Royal Bank of Scotland	UK Debt Management office	Soros
Banco D'Espana	British Airways	Woodbine
General Motors	Fortress	Loomis Sayles
		European Central Bank



Appendix A: Model Case Study - What is the Economic Impact of a Global Recession on Kuwait GDP?

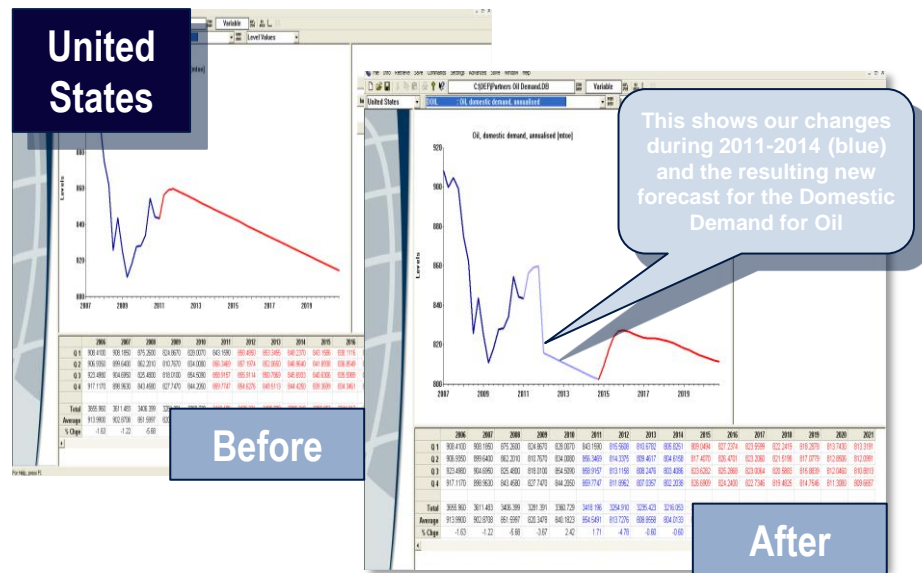
Sample Outputs

To estimate the economic impacts of a global recession on Kuwait GDP, we made the following assumptions

- We assumed the demand for oil by the top 7 countries to which Kuwait exports* is reduced by 5% as a result of a global recession (The following shows % of Kuwait exports to those countries)
 - ▶ Japan 17.9%
 - ▶ South Korea 17.3%
 - ▶ India 12.4%
 - ▶ Taiwan 9.1%
 - ▶ U.S. 7.9%
 - ▶ China 7.6%
 - ▶ Singapore 5.5% (2009)
- We examined the impacts on Kuwait GDP between 2012 and 2017
- Summary of Results:
 - ▶ Kuwait Gross Domestic Product (GDP) decreases by approximately \$433M on an average quarterly basis between 2012 and 2017 (Kuwait's average quarterly baseline GDP between 2012 and 2017 is approximately \$29B)
 - ▶ As a result world oil prices decrease by approximately \$11/barrel on an average quarterly basis between 2012 and 2017

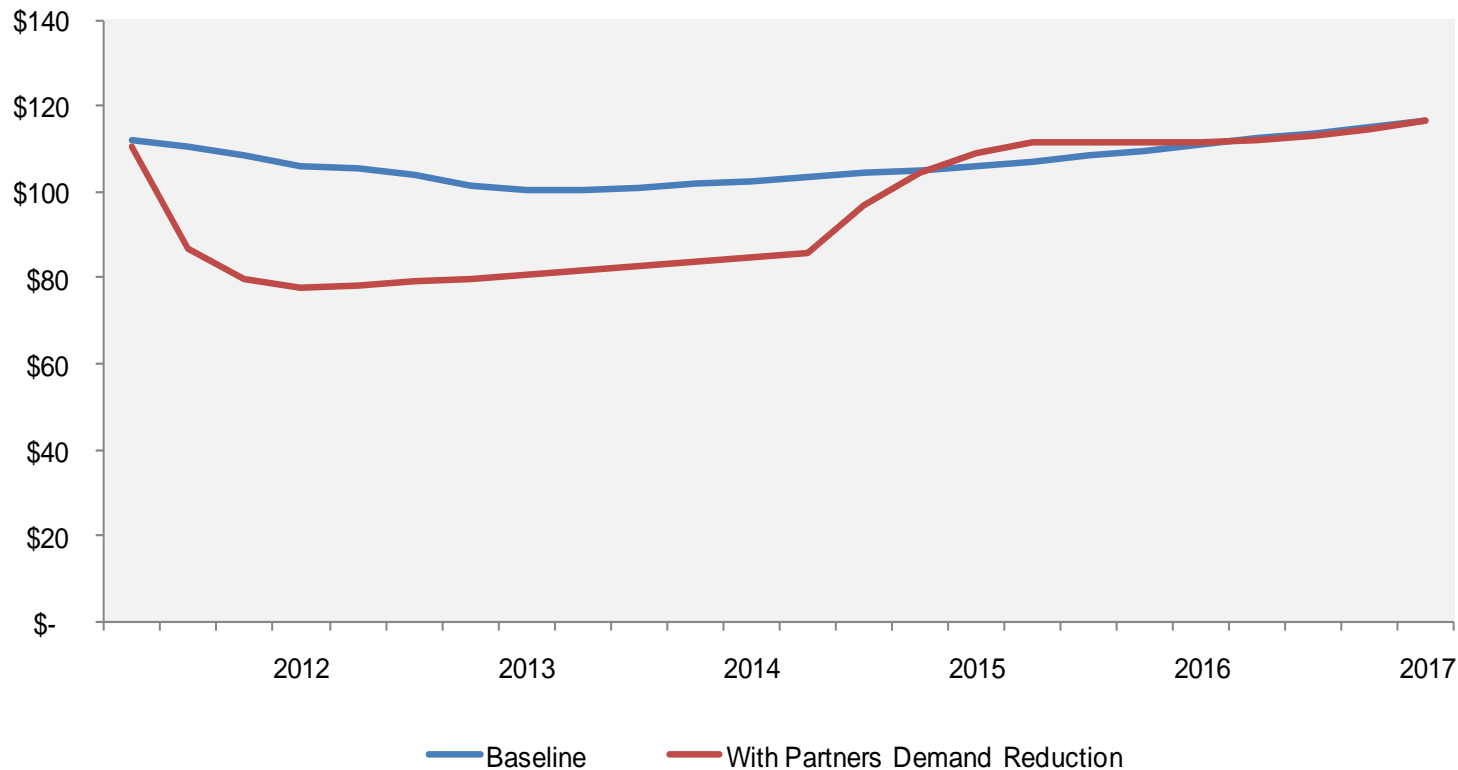
* Cia World Fact book - <https://www.cia.gov/library/publications/the-world-factbook/geos/ku.html>

Resulting from a global recession we assume an annual 5% reduction in the demand for oil in Japan, South Korea, India, Taiwan, United States, China, Singapore from 2012 to 2014



As a result of a 5% reduction in oil demand from Kuwait's top 7 importers, world oil prices decrease below the baseline by approximately \$11/barrel on an average quarterly basis between 2012 and 2017

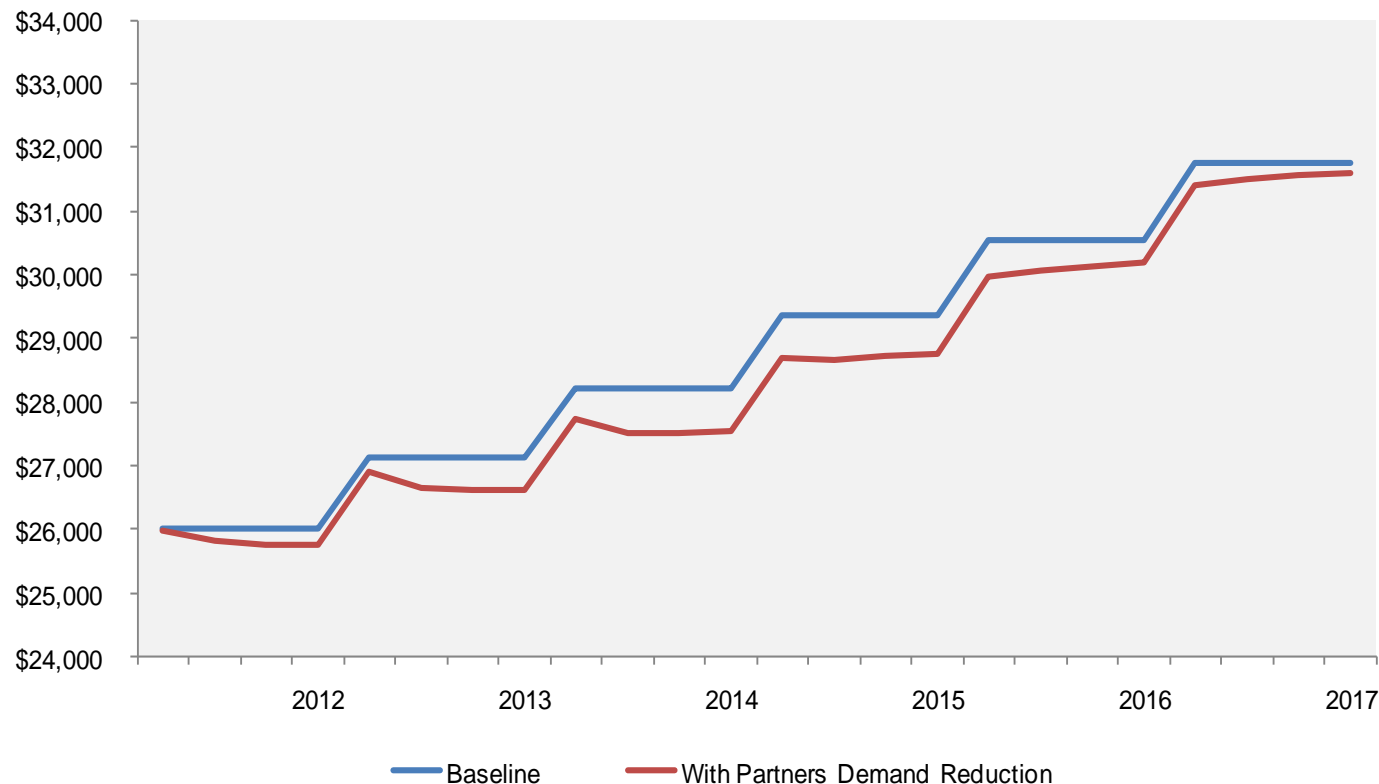
World oil price, Brent crude spotn, \$pb; Levels



- World oil price average quarterly baseline price between 2012 and 2017 is approximately \$107/barrel

As a result of a 5% reduction in oil demand from Kuwait's top 7 importers, Kuwait Gross Domestic Product (GDP) decreases by approximately \$433M on an average quarterly basis below the baseline between 2012 and 2017

GDP, constant prices and exchange rate, Kuwait; Levels



- Kuwait's average quarterly baseline GDP between 2012 and 2017 is approximately \$29B

This document is confidential and is intended solely for the use and information of the client to whom it is addressed.